

METRIC

MIL-PRF-55365/8E
28 February 2003
SUPERSEDING
MIL-PRF-55365/8D
3 July 1997

PERFORMANCE SPECIFICATION SHEET

* CAPACITORS, CHIP, FIXED, TANTALUM, POLARIZED
ESTABLISHED RELIABILITY AND NONESTABLISHED RELIABILITY,
STYLE CWR11 (METRIC)

This specification is approved for use by all Departments
and Agencies of the Department of Defense.

The requirements for acquiring the product described herein
shall consist of this specification and MIL-PRF-55365.

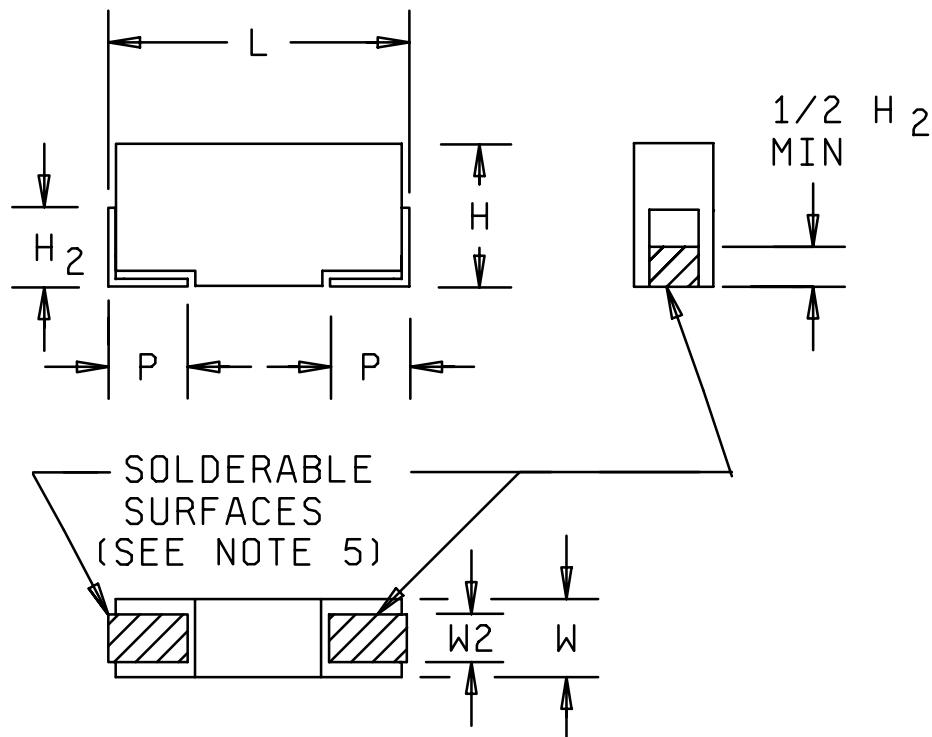


FIGURE 1. Style CWR11 (molded) capacitors.

*

| Case code | Dimensions | | | | | |
|-----------|----------------------|----------------------|----------------------|--------------|----------------------|---|
| | H | H ₂ (min) | L | P ±0.3 (.12) | W | W ₂ ±0.1 (.004) (see note 4) |
| A | 1.6 ±.2 (.063 ±.008) | 0.7 (.028) | 3.2 ±.2 (.126 ±.008) | 0.8 (.031) | 1.6 ±.2 (.063 ±.008) | 1.2 (.047) |
| B | 1.9 ±.2 (.075 ±.008) | 0.7 (.028) | 3.5 ±.2 (.138 ±.008) | 0.8 (.031) | 2.8 ±.2 (.110 ±.008) | 2.2 (.087) |
| C | 2.5 ±.3 (.098 ±.012) | 1.0 (.039) | 6.0 ±.3 (.236 ±.012) | 1.3 (.051) | 3.2 ±.3 (.126 ±.012) | 2.2 (.087) |
| D | 2.8 ±.3 (.110 ±.012) | 1.0 (.039) | 7.3 ±.3 (.287 ±.012) | 1.3 (.051) | 4.3 ±.3 (.169 ±.012) | 2.4 (.094) |

NOTES:

- 1. Dimensions are in millimeters. Inch equivalents are given in parenthesis for general information only.
- 2. These capacitors are designed for mounting by dip or wave soldering, reflow soldering, thermo-compression bonding, or other conventional means.
- 3. The anode (+) terminal shall be indicated by a marking on the case or by bevel on anode end.
- 4. Applicable to solderable surfaces only. The configuration of the nonsolderable area is optional.
- 5. Solderable surfaces are only those surfaces designated as such. Termination edges are not considered solderable.
- * 6. For solder coated terminations, add an additional 0.38 mm (.015 inch) to the tolerances for "L", "W", "H", "P", "W₂", and "H₂" for each case size.

FIGURE 1. Style CWR11 (molded) capacitors - Continued.

REQUIREMENTS:

Dimensions and configuration: See figure 1.

Termination finish: In accordance with MIL-PRF-55365.

DC rated voltage: See table I. Above +85°C, voltage derating is required (see MIL-PRF-55365).

Operating temperature range: -55°C to +125°C.

Product level designator: In accordance with MIL-PRF-55365.

DC leakage (DCL): See table I.

Capacitance: See table I.

Capacitance tolerance: ±5 percent (J), ±10 percent (K), or ±20 percent (M).

Dissipation factor (DF): See table I.

Equivalent series resistance (ESR) at 100 kHz: In accordance with MIL-PRF-55365. See table I.

Resistance to soldering heat: In accordance with MIL-PRF-55365.

Stability at low and high temperatures: In accordance with MIL-PRF-55365.

| | | |
|------------------|--------------|--|
| Step 1 (+25°C): | DCL | - See table I. |
| | Capacitance | - Within tolerance of table I value. |
| | DF | - See table I. |
| | ESR | - See table I. |
| Step 2 (-55°C): | ΔCapacitance | - Shall not exceed ±10 percent of initial measurement. |
| | DF | - See table I. |
| Step 3 (+25°C): | DCL | - See table I. |
| | ΔCapacitance | - Shall not exceed ±5 percent of initial +25°C measurement. |
| | DF | - See table I. |
| Step 4 (+85°C): | DCL | - See table I. |
| | ΔCapacitance | - Shall not exceed ±10 percent of initial +25°C measurement. |
| | DF | - See table I. |
| Step 5 (+125°C): | DCL | - See table I. |
| | ΔCapacitance | - Shall not exceed ±12 percent of initial +25°C measurement. |
| | DF | - See table I. |
| Step 6 (+25°C): | DCL | - See table I. |
| | ΔCapacitance | - Shall not exceed ±5 percent of initial +25°C measurement. |
| | DF | - See table I. |
| | ESR | - See table I. |

Life: Method 108 of MIL-STD-202.

2,000 hours:

| | | |
|----------|--------------|--|
| At 25°C: | DCL | - See table I. |
| | ΔCapacitance | - Within ±5 percent of initial measured value. |
| | DF | - See table I. |
| At 85°C: | DCL | - See table I. |

| | | |
|-----------|-----|----------------|
| At 125°C: | DCL | - See table I. |
|-----------|-----|----------------|

* TABLE I. Style CWR11 characteristics.

| Part or identifying number (PIN) <u>1/</u> | DC rated voltage (+85°C) | Cap. (nom) | DC Leakage (max) | | | Dissipation factor (max) | | | Max ESR 100 kHz +25°C | Case size |
|---|-----------------------------|---------------|------------------|-----------|-----------|--------------------------|-----------------|----------|-----------------------------|-----------|
| | | | +25°C | +85°C | +125°C | +25°C | +85°C +125°C | -55°C | | |
| CWR11C-225--- | 4 | <u>Volts</u> | <u>µF</u> | <u>µA</u> | <u>µA</u> | <u>µA</u> | <u>%</u> | <u>%</u> | <u>Ohms</u> | A |
| CWR11C-475--- | 4 | 2.2 | 0.5 | 5.0 | 6.0 | 6 | 9 | 9 | 8.0 | A |
| CWR11C-685--- | 4 | 4.7 | 0.5 | 5.0 | 6.0 | 6 | 9 | 9 | 8.0 | A |
| CWR11C-106--- | 4 | 6.8 | 0.5 | 5.0 | 6.0 | 6 | 9 | 9 | 5.5 | B |
| CWR11C-106--- | 4 | 10.0 | 0.5 | 5.0 | 6.0 | 6 | 9 | 9 | 4.0 | B |
| CWR11C-156--- | 4 | 15.0 | 0.6 | 6.0 | 7.2 | 6 | 9 | 9 | 3.5 | B |
| CWR11C-336--- | 4 | 33.0 | 1.3 | 13.0 | 15.6 | 6 | 9 | 9 | 2.2 | C |
| CWR11C-686--- | 4 | 68.0 | 2.7 | 27.0 | 32.4 | 6 | 9 | 9 | 1.1 | D |
| CWR11C-107--- | 4 | 100.0 | 4.0 | 40.0 | 48.0 | 8 | 12 | 12 | 0.9 | D |
| CWR11D-155--- | 6 | 1.5 | 0.5 | 5.0 | 6 | 6 | 9 | 9 | 8.0 | A |
| CWR11D-225--- | 6 | 2.2 | 0.5 | 5.0 | 6 | 6 | 6 | 9 | 8.0 | A |
| CWR11D-335--- | 6 | 3.3 | 0.5 | 5.0 | 6 | 6 | 9 | 9 | 8.0 | A |
| CWR11D-475--- | 6 | 4.7 | 0.5 | 5.0 | 6 | 6 | 9 | 9 | 5.5 | B |
| CWR11D-685--- | 6 | 6.8 | 0.5 | 5.0 | 6 | 6 | 6 | 9 | 4.5 | B |
| CWR11D-106--- | 6 | 10.0 | 0.6 | 6.0 | 7.2 | 6 | 9 | 9 | 3.5 | B |
| CWR11D-156--- | 6 | 15.0 | 0.9 | 9.0 | 10.8 | 6 | 6 | 9 | 3.0 | C |
| CWR11D-226--- | 6 | 22.0 | 1.4 | 14.0 | 16.8 | 6 | 9 | 9 | 2.2 | C |
| CWR11D-476--- | 6 | 47.0 | 2.8 | 28.0 | 33.6 | 6 | 6 | 9 | 1.1 | D |
| CWR11D-686--- | 6 | 68.0 | 4.3 | 43.0 | 51.6 | 6 | 9 | 9 | 0.9 | D |
| CWR11F-105--- | 10 | 1.0 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 10.0 | A |
| CWR11F-155--- | 10 | 1.5 | 0.5 | 5.0 | 6.0 | 6 | 6 | 9 | 8.0 | A |
| CWR11F-225--- | 10 | 2.2 | 0.5 | 5.0 | 6.0 | 6 | 9 | 9 | 8.0 | A |
| CWR11F-335--- | 10 | 3.3 | 0.5 | 5.0 | 6.0 | 6 | 9 | 9 | 5.5 | B |
| CWR11F-475--- | 10 | 4.7 | 0.5 | 5.0 | 6.0 | 6 | 9 | 9 | 4.5 | B |
| CWR11F-685--- | 10 | 6.8 | 0.7 | 7.0 | 8.4 | 6 | 9 | 9 | 3.5 | B |
| CWR11F-156--- | 10 | 15.0 | 1.5 | 15.0 | 18.0 | 6 | 6 | 9 | 2.5 | C |
| CWR11F-336--- | 10 | 33.0 | 3.3 | 33.0 | 39.6 | 6 | 9 | 9 | 1.1 | D |
| CWR11F-476--- | 10 | 47.0 | 4.7 | 47.0 | 56.4 | 6 | 9 | 9 | 0.9 | D |
| CWR11H-684--- | 15 | 0.68 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 12.0 | A |
| CWR11H-105--- | 15 | 1.0 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 10.0 | A |
| CWR11H-155--- | 15 | 1.5 | 0.5 | 5.0 | 6.0 | 6 | 9 | 9 | 8.0 | A |
| CWR11H-225--- | 15 | 2.2 | 0.5 | 5.0 | 6.0 | 6 | 9 | 9 | 5.5 | B |
| CWR11H-335--- | 15 | 3.3 | 0.5 | 5.0 | 6.0 | 6 | 8 | 9 | 5.0 | B |
| CWR11H-475--- | 15 | 4.7 | 0.7 | 7.0 | 8.4 | 6 | 9 | 9 | 4.0 | B |
| CWR11H-106--- | 15 | 10.0 | 1.6 | 16.0 | 19.2 | 6 | 8 | 9 | 2.5 | C |
| CWR11H-226--- | 15 | 22.0 | 3.3 | 33.0 | 39.6 | 6 | 8 | 9 | 1.1 | D |
| CWR11H-336--- | 15 | 33.0 | 5.3 | 53.0 | 63.6 | 6 | 9 | 9 | 0.9 | D |
| CWR11J-474--- | 20 | 0.47 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 14.0 | A |
| CWR11J-684--- | 20 | 0.68 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 12.0 | A |
| CWR11J-105--- | 20 | 1.0 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 10.0 | A |
| CWR11J-155--- | 20 | 1.5 | 0.5 | 5.0 | 6.0 | 6 | 9 | 9 | 6.0 | B |
| CWR11J-225--- | 20 | 2.2 | 0.5 | 5.0 | 6.0 | 6 | 8 | 9 | 5.0 | B |
| CWR11J-335--- | 20 | 3.3 | 0.7 | 7.0 | 8.4 | 6 | 9 | 9 | 4.0 | B |

See footnote at end of table.

* TABLE I. Style CWR11 characteristics - Continued.

| PIN 1/ | DC rated voltage (+85°C) | Cap. (nom) | DC Leakage (max) | | | Dissipation factor (max) | | | Max ESR 100 kHz +25°C | Case size |
|---------------|--------------------------------|---------------|---------------------|-------|--------|-----------------------------|-------|--------|-----------------------------|--------------|
| | | | +25°C | +85°C | +125°C | +25°C | +85°C | +125°C | | |
| CWR11J-475--- | 20 | 4.7 | 1.0 | 10.0 | 12.0 | 6 | 8 | 9 | 3.0 | C |
| CWR11J-685--- | 20 | 6.8 | 1.4 | 14.0 | 16.8 | 6 | 9 | 9 | 2.4 | C |
| CWR11J-156--- | 20 | 15.0 | 3.0 | 30.0 | 36.0 | 6 | 8 | 9 | 1.1 | D |
| CWR11J-226--- | 20 | 22.0 | 4.4 | 44.0 | 52.8 | 6 | 9 | 9 | 0.9 | D |
| CWR11K-334--- | 25 | 0.33 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 15.0 | A |
| CWR11K-474--- | 25 | 0.47 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 14.0 | A |
| CWR11K-684--- | 25 | 0.68 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 7.5 | B |
| CWR11K-105--- | 25 | 1.0 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 6.5 | B |
| CWR11K-155--- | 25 | 1.5 | 0.5 | 5.0 | 6.0 | 6 | 8 | 9 | 6.5 | B |
| CWR11K-225--- | 25 | 2.2 | 0.6 | 6.0 | 7.2 | 6 | 9 | 9 | 3.5 | C |
| CWR11K-335--- | 25 | 3.3 | 0.9 | 9.0 | 10.8 | 6 | 8 | 9 | 3.5 | C |
| CWR11K-475--- | 25 | 4.7 | 1.2 | 12.0 | 14.4 | 6 | 9 | 9 | 2.5 | C |
| CWR11K-685--- | 25 | 6.8 | 1.7 | 17.0 | 20.4 | 6 | 9 | 9 | 1.4 | D |
| CWR11K-106--- | 25 | 10.0 | 2.5 | 25.0 | 30.0 | 6 | 8 | 9 | 1.2 | D |
| CWR11K-156--- | 25 | 15.0 | 3.8 | 38.0 | 45.6 | 6 | 9 | 9 | 1.0 | D |
| CWR11M-104--- | 35 | 0.10 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 24.0 | A |
| CWR11M-154--- | 35 | 0.15 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 21.0 | A |
| CWR11M-224--- | 35 | .22 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 18.0 | A |
| CWR11M-334--- | 35 | .33 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 15.0 | A |
| CWR11M-474--- | 35 | .47 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 10.0 | B |
| CWR11M-684--- | 35 | .68 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 8.0 | B |
| CWR11M-105--- | 35 | 1.0 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 6.5 | B |
| CWR11M-155--- | 35 | 1.5 | 0.5 | 5.0 | 6.0 | 6 | 8 | 9 | 4.5 | C |
| CWR11M-225--- | 35 | 2.2 | 0.8 | 8.0 | 9.6 | 6 | 8 | 9 | 3.5 | C |
| CWR11M-335--- | 35 | 3.3 | 1.2 | 12.0 | 14.4 | 6 | 8 | 9 | 2.5 | C |
| CWR11M-475--- | 35 | 4.7 | 1.7 | 17.0 | 20.4 | 6 | 8 | 9 | 1.5 | D |
| CWR11M-685--- | 35 | 6.8 | 2.4 | 24.0 | 28.8 | 6 | 9 | 9 | 1.3 | D |
| CWR11N-104--- | 50 | .10 | 0.5 | 5.0 | 12 | 6 | 8 | 8 | 22.0 | A |
| CWR11N-154--- | 50 | .15 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 17.0 | B |
| CWR11N-224--- | 50 | .22 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 14.0 | B |
| CWR11N-334--- | 50 | .33 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 12.0 | B |
| CWR11N-474--- | 50 | .47 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 8.0 | C |
| CWR11N-684--- | 50 | .68 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 7.0 | C |
| CWR11N-105--- | 50 | 1.0 | 0.5 | 5.0 | 6.0 | 4 | 6 | 6 | 6.0 | C |
| CWR11N-155--- | 50 | 1.5 | 0.8 | 8.0 | 9.6 | 6 | 8 | 9 | 4.0 | D |
| CWR11N-225--- | 50 | 2.2 | 1.1 | 11.0 | 13.2 | 6 | 8 | 9 | 2.5 | D |
| CWR11N-335--- | 50 | 3.3 | 1.7 | 17.0 | 20.4 | 6 | 9 | 9 | 2.0 | D |
| CWR11N-475--- | 50 | 4.7 | 2.4 | 24.0 | 28.8 | 6 | 9 | 9 | 1.5 | D |

* 1/ Complete PIN shall include additional symbols to indicate termination finish, capacitance tolerance, product level, and, if applicable, surge current option letter. If optional surge current is not required, the last "-" shall be deleted.

Marking: In accordance with MIL-PRF-55365, to be marked on top of case as follows: Print orientation is optional.

Case code A

| |
|------|
| J |
| 105X |

- (+) polarity stripe, J = JAN
- capacitance in picofarad code
- manufacturer's identifier

Case codes B, C, and D

| |
|-----|
| J |
| 105 |
| 35X |

- (+) polarity stripe, J = JAN
- capacitance in picofarad code
- rated voltage; manufacturer's identifier

Alternate case code A marking

| |
|------|
| X |
| 105J |

- (+) polarity stripe, X = manufacturer's identifier
- capacitance in picofarad code; J = JAN

At the option of the manufacturer, the lot date code may be marked on the top of the case for any case code.

Custodians:

Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:

Army - CR

Agent:
DLA - CC

Review activities:

Army - AR, MI
Navy - AS, MC, OS, SH
Air Force - 19, 99
NASA - NA

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